

Amendments to the Claims

The following listing of the claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A purified nucleic acid construct comprising:  
a gene cassette encoding ~~at least one~~ a modified protein selected from the group consisting of: a modified LuxA comprising an amino acid sequence in its carboxy terminus that specifically binds to a tail-specific protease, and  
a modified LuxB comprising a PEST sequence in its carboxy terminus that specifically binds to a protein associated with a ubiquitin-proteasome pathway, said modified protein comprising at least one modification in its amino acid sequence relative to the sequence of a wild-type form of said protein, wherein said modification comprises the addition of a peptide sequence to the protein, and  
wherein the amino acid sequence that specifically binds to a tail-specific protease results in a reduced half-life of the modified LuxA protein when expressed in a bacterial cell is shorter than compared to the half-life of the wild-type form of the LuxA protein when expressed in the bacterial cell, and  
wherein the PEST sequence results in a reduced half-life of the modified LuxB protein when expressed in a yeast cell compared to the half-life of the wild-type form of the LuxB protein when expressed in the yeast cell.

Claim 2 (currently amended): The purified nucleic acid construct of claim 1, wherein said gene cassette encodes both the modified LuxA and a modified LuxB[[],] comprising the amino acid sequence in its carboxy terminus that specifically binds to the tail-specific protease, wherein the amino acid sequence that specifically binds to a tail-specific protease results in a reduced half-life of the modified LuxB protein when expressed in a bacterial cell compared to the half-life of the wild-type form of the LuxB protein when expressed in the bacterial cell wherein the modified LuxA comprises at least one modification in its amino acid sequence relative to the sequence of a wild-type LuxA, and wherein the modified LuxB comprises at least one modification in its amino acid sequence relative to the sequence of a wild-type LuxB.

Claim 3 (previously presented): The purified nucleic acid construct of claim 1, wherein said gene cassette encodes all proteins necessary for production of bioluminescence without addition of an exogenous substrate.

Claim 4 (currently amended): The purified nucleic acid construct of claim 1 [[3]], wherein the gene cassette further encodes LuxC, LuxD, and LuxE.

Claim 5 (canceled).

Claim 6 (previously presented): The purified nucleic acid construct of claim 1, wherein the modified protein is derived from a bacteria selected from the group consisting of: *Photorhabdus luminescens*, *Vibrio fischeri* and *Vibrio harveyi*.

Claims 7 and 8 (canceled).

Claim 9 (currently amended): [[The]] A purified nucleic acid construct of claim 8, comprising a gene cassette encoding a modified LuxA comprising a carboxy-terminal sequence selected from the group consisting of SEQ ID NOS: 8, 9, and 10, wherein the half-life of the modified LuxA protein when expressed in an *E. coli* cell is shorter than the half-life of the wild-type form of the LuxA protein when expressed in the *E. coli* cell peptide sequence comprises SEQ ID NO:8.

Claim 10 (currently amended): The purified nucleic acid construct of claim [[8]] 9, wherein the gene cassette further encodes a modified LuxB comprising the amino acid sequence in its carboxy terminal sequence that specifically binds to the tail-specific protease, and wherein the half-life of the modified LuxB protein when expressed in an *E. coli* cell is shorter than the half-life of the wild-type form of the protein when expressed in the *E. coli* cell peptide sequence comprises SEQ ID NO:9.

Claim 11 (currently amended): The purified nucleic acid construct of claim [[8]] 9, wherein the modified LuxA and LuxB are derived from a bacteria selected from the group consisting of: *Photorhabdus luminescens*, *Vibrio fischeri* and *Vibrio harveyi* comprises SEQ ID NO:10.

Claims 12-14 (canceled).

Claim 15 (currently amended): The purified nucleic acid construct of claim 1 [[7]], wherein the modified protein is the modified LuxB and said protein associated with a proteolytic ubiquitin-proteasome pathway mediates degradation of said the modified protein LuxB via a ubiquitin-proteasome pathway.

Claim 16 (previously presented): The purified nucleic acid construct of claim 15, wherein said protein associated with a ubiquitin-proteasome pathway is SCF(GRR1).

Claim 17 (canceled).

Claim 18 (currently amended): [[The]] A purified nucleic acid construct of claim 17, comprising a modified LuxB comprising the wherein said PEST-rich 178 amino acid sequence comprises a PEST rich carboxy terminal sequence of G1 cyclin Cln2.

wherein the half-life of the modified LuxB protein when expressed in a yeast cell is shorter than the half-life of the wild-type form of the LuxB protein when expressed in the yeast cell.

Claim 19 (previously presented): A vector comprising the purified nucleic acid construct of claim 1.

Claim 20 (previously presented): The vector of claim 19, wherein said vector is a plasmid.

Claim 21 (previously presented): The vector of claim 19, wherein said vector is an expression vector suitable for expressing a nucleic acid incorporated in the vector in a cell type selected from the group consisting of: a bacterial cell, a yeast cell and a mammalian cell.

Claim 22 (previously presented): A prokaryotic cell comprising the vector of claim 19.

Claim 23 (previously presented): The prokaryotic cell of claim 22, wherein said cell is a bacterial cell.

Claim 24 (canceled).

Claim 25 (previously presented): A eukaryotic cell comprising the vector of claim 19.

Claim 26 (previously presented): The eukaryotic cell of claim 25, wherein said cell is a yeast cell or a mammalian cell.

Claims 27-29 (canceled).

Claim 30 (new): The purified nucleic acid construct of claim 18, wherein said gene cassette further encodes LuxA.

Claim 31 (new): The purified nucleic acid construct of claim 30, wherein the modified LuxB protein and the LuxA protein are derived from a bacteria selected from the group consisting of: *Photorhabdus luminescens*, *Vibrio fischeri* and *Vibrio harveyi*.